

## FEATURES

- Universal 85 - 264VAC or 120 - 373VDC input voltage
- Accepts AC or DC input (dual-use of same terminal)
- Operating ambient temperature range: -30°C - +70°C
- Low standby power consumption, high efficiency
- High I/O isolation test voltage up to 4000VAC
- Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Safety according to IEC/EN/UL62368/EN60335/GB4943 (CE/CCC pending)
- Withstand 300VAC surge input for 5s
- Over-voltage class III (designed to meet EN61558)
- Operating up to 5000m altitude

LM35-20Bxx series is one of Mornsun's enclosed AC-DC switching power supply. It features universal AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency and high reliability. These converters offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC62368, UL62368, EN62368, EN60335, GB4943 standards and they are widely used in industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

## Selection Guide

Certification	Part No.	Output Power(W)	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range(V)	Efficiency at 230VAC (%) Typ.	Max. Capacitive Load (μF)
CE/CCC (Pending)	LM35-20B05	35	5V/7A	4.5-5.5	82	8000
	LM35-20B12	36	12V/3A	10.2-13.8	86	1500
	LM35-20B15	36	15V/2.4A	13.5-18	87	1000
	LM35-20B24	36	24V/1.5A	21.6-28.8	88	750

## Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	264	VAC
	DC input		120	--	373	VDC
Input Voltage Frequency			47	--	63	Hz
Input Current	115VAC		--	--	0.8	A
	230VAC		--	--	0.4	
Inrush Current	115VAC	Cold start	--	30	--	
	230VAC		--	45	--	
Hot Plug			Unavailable			





## Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load range	5V	--	±2	--	%
		12V/15V/24V	--	±1	--	
Line Regulation	Rated load		--	±0.5	--	
Load Regulation	0% - 100% load	5V	--	±1	--	
		12V/15V/24V	--	±0.5	--	
Output Ripple & Noise*	20MHz bandwidth	5V	--	80	--	mV
		12V/15V	--	120	--	

	(peak-to-peak value)	24V	--	180	--	
Temperature Coefficient			--	±0.03	--	%/°C
Minimum Load			0	--	--	%
Stand-by Power Consumption			--	--	0.3	W
Hold-up Time	115VAC		12	--	--	ms
	230VAC		30	--	--	
Short Circuit Protection	Recovery time is less than 5s after the short circuit disappear.		Hiccup, continuous, self-recovery			
Over-current Protection			110%-150% Io, self-recovery			
Over-voltage Protection	5V		≤ 6.3VDC (Clamping protection)			
	12V		≤ 16.2VDC (Clamping protection)			
	15V		≤ 21.75VDC (Clamping protection)			
	24V		≤ 33.6VDC (Clamping protection)			

Note: The "Tip and barrel method" is used for Ripple and Noise test, please refer to AC-DC Converter Application Notes for specific information.

## General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Test	Input - 	Electric strength test for 1min., leakage current <10mA	2000	--	--	VAC
	Input-output		4000	--	--	
	output - 		1250	--	--	
Insulation Resistance	Input - 	At 500VDC	50	--	--	MΩ
	Input - output		50	--	--	
	output - 		50	--	--	
Operating Temperature			-30	--	+70	°C
Storage Temperature			-40	--	+85	°C
Storage Humidity	Non-condensing		--	--	95	%RH
Switching Frequency				65		kHz
Power Derating	Operating temperature derating	-30°C to -25°C	85VAC-100VAC	5		% / °C
		+50°C to +70°C		2		
	Input voltage derating	85VAC-100VAC	1.33			% / VAC
Safety Standard			Meet IEC/EN/UL62368/EN60335/GB4943			
Safety Class			CLASS I			
MTBF			MIL-HDBK-217F@25°C >300,000 h			

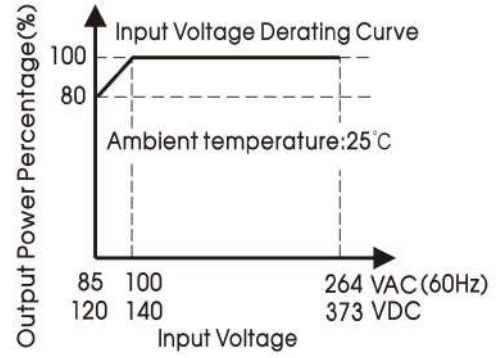
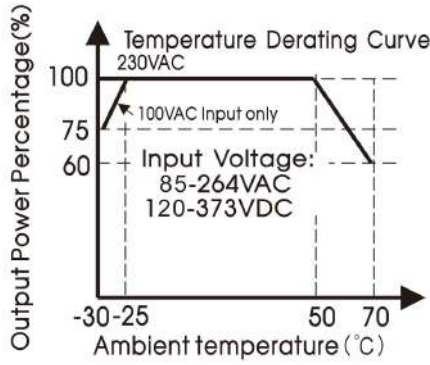
## Mechanical Specifications

Case Material	Metal (AL1100, SGCC)
Dimensions	99.00 x 82.00 x 30.00 mm
Weight	180 g (Typ.)
Cooling Method	Free air convection

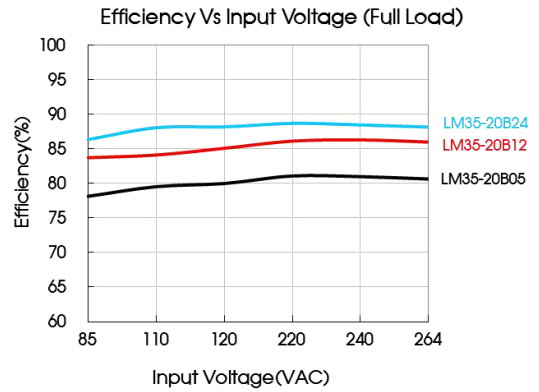
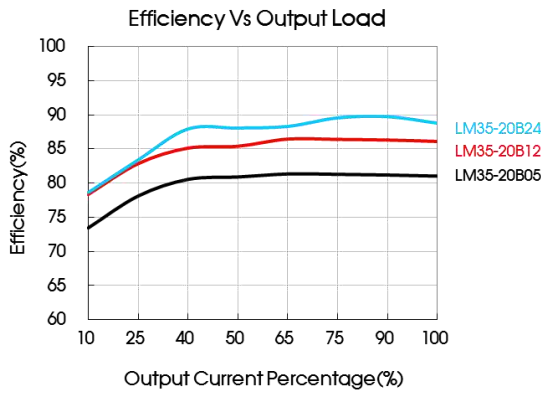
## Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
EMS	ESD	IEC/EN 61000-4-2	Contact ±6KV / Air ±8KV	Perf. Criteria A
	RS	IEC/EN 61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN 61000-4-4	±2KV	perf. Criteria A
	Surge	IEC/EN 61000-4-5	line to line ±2KV/line to ground ±4KV	perf. Criteria A
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	DIP	IEC/EN61000-4-11	0%, 70%	perf. Criteria B

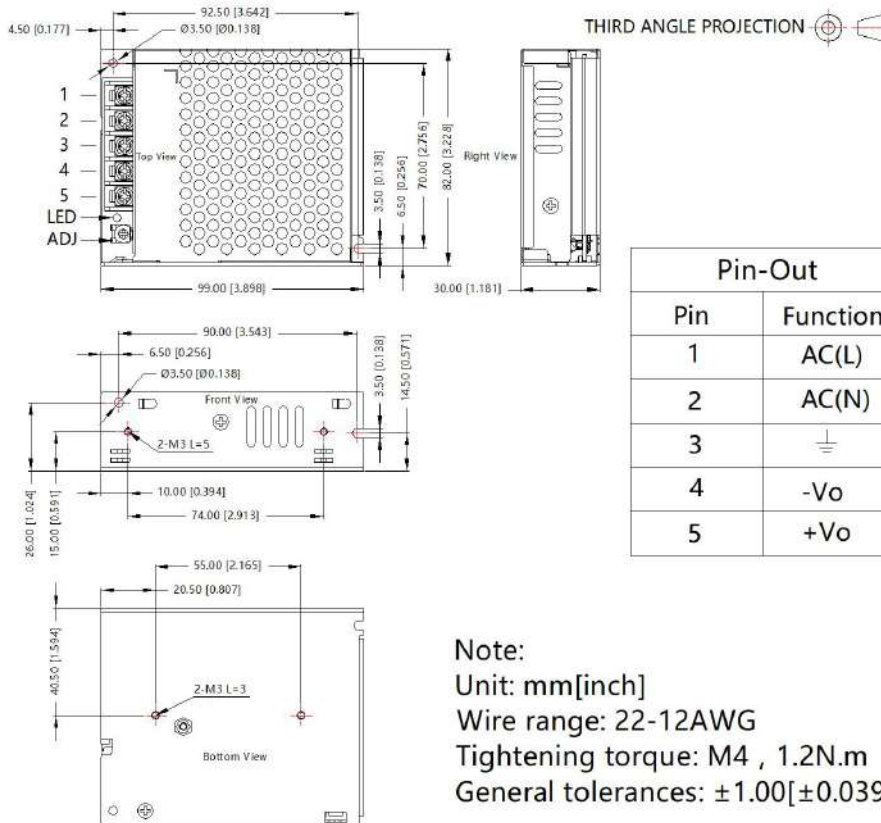
Product Characteristic Curve



Note: ① Input voltage reduction is required on the basis of temperature reduction for the input voltage is 85 - 100VAC/120 - 140VDC;  
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



Dimensions and Recommended Layout



Note:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). Packaging bag number: 58220067;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75%RH with nominal input voltage and rated output load;
3. The ambient temperature derating of  $5^{\circ}\text{C}/1000\text{m}$  is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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